

Amendment and Response

Applicant: Joseph M. Torgerson et al.
Serial No.: 10/827,030
Filed: April 19, 2004
Docket No.: 200210152-1
Title: FLUID EJECTION DEVICE

REMARKS

The following Remarks are made in response to the Final Office Action mailed April 3, 2008, in which claims 3, 5, 32, 34-42, and 45-50 were withdrawn from consideration, and claims 1, 4, 6-22, 24, 31, 33, 43, 44, 56, and 57 were rejected.

With this Amendment, claims 4, 22, 24-34, and 44 have been cancelled without prejudice, claims 64-69 have been added, and claims 1, 43, and 56 have been amended to clarify Applicant's invention.

Claims 1, 6-21, 43, 56, 57, and 64-69, therefore, remain pending in the application and are presented for reconsideration and allowance.

Claim Rejections under 35 U.S.C. § 102

Claims 22 and 24-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Cleland et al. US Patent No. 6,491,377.

With this Amendment, claims 22 and 24-34 have been cancelled without prejudice. The rejection of claims 22 and 24-29 under 35 U.S.C. 102(b), therefore, is rendered moot.

Claim Rejections under 35 U.S.C. § 103

Claims 1, 4, 8-19, 21, 30, 43, 44, 56, and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cleland et al. US Patent No. 6,491,377 in view of Bhaskar et al. US Patent No. 5,808,640.

Claims 6, 7, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cleland et al. US Patent No. 6,491,377 and Bhaskar et al. US Patent No. 5,808,640, and further in view of Maze et al. US Publication No. 2001/0008411.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cleland et al. US Patent No. 6,491,377 and Bhaskar et al. US Patent No. 5,808,640 and further in view of Chen et al. US Publication No. 2002/0135640.

With this Amendment, claims 4 and 44 have been cancelled without prejudice. The rejection of claims 4 and 44 under 35 U.S.C. 103(a), therefore, is rendered moot.

With this Amendment, independent claim 1 has been amended to clarify that the fluid ejection device includes "first conductive leads extending to respective ones of the first firing resistors, and second conductive leads extending from respective ones of the first

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firing resistors," wherein "the reference conductor is disposed between adjacent ones of the first firing resistors as associated with respective ones of the first nozzle openings, between the first conductive leads and the second conductive leads of one of the first firing resistors and the first conductive leads and the second conductive leads of an adjacent one of the first firing resistors, and under the fluid path in an area between the first fluid feed slot edge and the first firing resistors."

With this Amendment, independent claim 43 has been amended to clarify that the method of operating a fluid ejection device includes "receiving a first current at the first firing resistors via first conductive leads extending to respective ones of the first firing resistors," includes "receiving the first current from the first firing resistors at a reference conductor via second conductive leads extending from respective ones of the first firing resistors," with "the reference conductor formed on the substrate between adjacent ones of the first firing resistors as associated with respective ones of the first nozzle openings, between the first conductive leads and the second conductive leads extending to and from one of the first firing resistors and the first conductive leads and the second conductive leads extending to and from an adjacent one of the first firing resistors, and under the fluid path in an area between the first fluid feed slot edge and the first firing resistors," and includes "conducting part of the first current through the reference conductor as disposed between the adjacent ones of the first firing resistors, between the first conductive leads and the second conductive leads extending to and from one of the first firing resistors and the first conductive leads and the second conductive leads extending to and from an adjacent one of the first firing resistors, and between the first fluid feed slot edge and the first firing resistors."

With this Amendment, independent claim 56 has been amended to clarify that the fluid ejection device includes "first conductive leads extending to respective ones of the firing resistors and second conductive leads extending from respective ones of the firing resistors," and includes "a reference conductor disposed between adjacent ones of the firing resistors as communicated with respective ones of the nozzle openings, between the first conductive leads and the second conductive leads extending to and from one of the firing resistors and the first conductive leads and the second conductive leads

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extending to and from an adjacent one of the firing resistors, and under the fluid path in an area between an edge of the fluid feed slot and the vaporization chambers."

Accordingly, as outlined in the Specification at page 27, lines 9-18, by disposing the reference conductor between the ink feed slot edge and the firing resistor areas, including the firing resistors, and between the firing resistor areas of adjacent firing cells, the present invention is advantageous in that the reference conductor has a larger or increased area. Thus, as outlined in the Specification at, for example, page 27, lines 15-19, the larger area of the reference conductor reduces the energy variation between firing cells and provides a more uniform ink pattern.

With respect to the cited references, Applicant submits that these references, individually or in combination, do not disclose a fluid ejection device as claimed in independent claim 1, do not disclose a method as claimed in independent claim 43, and do not disclose a fluid ejection device as claimed in independent claim 56 including, amongst other things, a reference conductor disposed (1) between adjacent ones of firing resistors as associated with respective ones of nozzle openings, disposed (2) between (a) first conductive leads and second conductive leads extending to and from one of the firing resistors and (b) first conductive leads and second conductive leads extending to and from an adjacent one of the firing resistors, and disposed (3) under a fluid path in an area between a fluid feed slot edge and the firing resistors.

In view of the above, Applicant submits that independent claims 1, 43, and 56, and the dependent claims depending therefrom, are each patentably distinct from the cited references and, therefore, are each in a condition for allowance. Applicant, therefore, respectfully requests that the rejections of claims 1, 4, 6, 7, 8-19, 20, 21, 30, 31, 43, 44, 56, and 57 under 35 U.S.C. 103(a) be reconsidered and withdrawn, and that claims 1, 6-21, 43, 56, 57, and 64-69 be allowed.

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CONCLUSION

In view of the above, Applicant respectfully submits that pending claims 1, 6-21, 43, 56, 57, and 64-69 are all in a condition for allowance and requests reconsideration of the application and allowance of all pending claims.

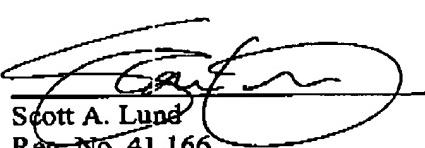
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